The effect of shareholder concentration and type on firm performance and leverage

Master Thesis Financial Economics

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Abstract

This study examines the influence of shareholder concentration and shareholder type on firm performance and leverage for both listed and non-listed companies based in Belgium, Germany and the Netherlands for the period 2009-2017. I provide evidence that the presence of a blockholder leads to better firm performance, especially when the controlling shareholder is a family. In contrast, a foundation or public authority leads to worse performance. No supporting evidence is found for a positive impact of private equity funds on firm performance. Besides, I find a positive impact for the presence of a blockholder on the leverage ratio. This is especially the case when the controlling shareholder is an institutional investor, family or private equity fund. I did not find a significant relation between a bank as controlling shareholder and the leverage ratio of a company.

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I. Introduction

A lot of research has highlighted the agency problem of ownership concentration: already in the 1930's, Berle and Means wrote about the divergent interest of the management and that of the owners of a firm. The increasing number of listed companies led to more dispersed ownership structures, which affected voting rights of the shareholders. Jensen and Meckling further developed this idea of the agency theory. They describe the agency relationship as a contract under which the manager should work in the interest of the shareholders. However, this could lead to managers who will act in their own interest opposing to the best interest of the firm. It is an interesting and important theme to study the ownership structure of a company, since conflicts of interest between the management and shareholders could hurt, for example, firm performance.

The ownership structure of a company can be defined as the identities of a firm's equity holders and the sizes of their positions (Denis & McConnell, 2003). A great overlap between ownership and control could lead to a reduction in conflicts of interests and therefore an increase in firm performance. However, if the interests of shareholders and managers are not fully aligned, higher equity ownership can provide managers freedom to act in their own interest. This is the trade-off between the alignment and entrenchment effects. Besides firm performance, the ownership structure can affect other characteristics of a company, like the leverage ratio. Large shareholders have stronger incentives to monitor and control the board, which could lead to different leverage ratios.

Another important difference in the ownership structure is the type of shareholder. Since different shareholders have different objectives, this could lead to differences in firm performance and leverage ratio as well. Managerial ownership, for example, could lead to alignment of interests and better firm performance, while a public authority as controlling shareholder could lead to worse firm performance.

Although a lot of research has been done studying the effect of shareholder concentration and shareholder type on firm performance and firm leverage, this thesis provides new insights by focussing on Belgium, Germany and the Netherlands and focusses both on listed and non-listed firms. In addition, a number of developments are visible in the field of corporate governance in the European Union for which this study could be relevant. With the introduction of the EU-directive to support long-term shareholder engagement and the changing position of shareholders in Western-European countries, the impact of shareholder concentration is important to understand (de Jong, Roëll, & Westerhuis, 2017). Besides, only a few papers study the effect of shareholder concentration

on firms in Belgium and the Netherlands, thereby focussing on listed-firms. This thesis contributes to the existing literature by looking at those companies in Belgium, Germany and the Netherlands after the economic crisis. The research question of this thesis will be as follows:

- *What is the effect of the ownership structure on the firm performance and leverage ratio of companies based in Belgium, Germany and the Netherlands?*

Using a sample of 12,870 companies based in Belgium, Germany and the Netherlands for the period 2009 – 2007, I studied the relationship between shareholder concentration, firm performance and leverage. Besides, I studied the effect of different types of shareholders on firm performance and leverage.

After performing different regressions, I find a positive and significant relationship between shareholder concentration and firm performance, while shareholder concentration is measured by the BvD Independence Indicator and the return on assets and the return on equity are used as a proxy for firm performance. This is in line with the theory that a higher concentration of ownership leads to more incentives to monitor and control the firm and thus better firm performance.

Besides using the BvD Independence Indicator, I use the number of shareholders as potential proxy for shareholder concentration. Performing the same regressions leads to a positive and significant relationship between the number of shareholders and the ROE. This result is unexpected, since an increasing number of shareholders, all else equal, should lead to a lower concentration of shareholders. However, there is no information available about the distribution of shares among the shareholders and there could also be a positive relation because of the positive "image" of the company: it could be that many investors want to participate, simply because it is a good company.

When studying the effect of different types of shareholder on firm performance, I find a positive relationship between a family as controlling shareholder and the ROA, while there is a negative relationship between a public authority and the ROA. This is the same for the relationship between the different types of shareholders and the ROE, for which I also find a positive effect if there is a corporate or institutional shareholder. There is a significant and negative effect of foundations on the ROE. This is partly in line with the idea that alignment of interests could lead to higher firm performance. However, it is noteworthy that there is no significant link between private equity funds and firm performance.

Secondly, I studied the relation between shareholder concentration, the type of shareholders and the leverage ratio of a company. I find that the presence of a blockholder has a positive and significant effect on the leverage ratio of a company, while there is a relatively small and negative

effect of the number of shareholders on the leverage ratio. Lastly, I find a positive relationship between institutional investors, families and private equity funds and the leverage ratio while there is a negative relationship between a public authority as controlling shareholder and the leverage ratio. Those results are robust to a number of checks.

This paper is organised as follows. Section II describes the theoretical framework and existing literature and ends with the hypotheses. Section III will describe the sample selection and the data used in this thesis, while section IV discusses the methodology of this paper. Section V shows the results and robustness checks, while this thesis ends with a conclusion and limitations in section VI.

II. Theoretical Framework

Already in 1776, Adam Smith wrote about a potential conflict of interest between owners and controllers, when ownership and control of companies are not fully aligned. Jensen and Meckling (1976) further developed this idea of the agency theory: the conflict of interest could reduce the value of a company and is one of the most important reasons for studying corporate governance. Corporate governance is defined as the set of mechanisms that motivate controllers to maximize firm value for its owners (Denis & McConnell, 2003). One of these governance mechanisms is the ownership structure of a company.

The ownership structure of a company is an important element of corporate governance, since ownership and control overlap in many cases: the board of a company has some degree of ownership over the equity of the firm it controls, while some shareholders, because of the size of their position, have some control over the companies they own. It could be argued that a greater overlap between ownership and control could lead to less conflicts of interest and a higher firm value as well. When, for example, the management of a company is also the biggest shareholder of the company, this could lead to a better alignment of the managers' interest with those of the shareholders. However, higher equity ownership could lead to managers with greater freedom to act in their own interest: the equity ownership can entrench managers. The effect of, in this case managerial ownership depends on the trade-off between the alignment and entrenchment effect.

In many companies, the shares are distributed among several parties. Because those parties own very small fractions, they have little incentives to monitor and control managers. This so-called free-rider problem could lead to lower firm value (Wruck, 1989). Individual shareholders who own a larger portion of the shares have a greater individual incentive to monitor, control and influence the board of the company. This could lead to a higher firm value, but is not necessarily the case. Those blockholders can use their power to let the board make decisions in their favour. There is a trade-off

between the shared benefits of blockholder control for all blockholders and the private benefits for only the blockholder.

Besides firm value, the presence of a blockholder could affect the amount of risk the company is taking. The primary reason for using debt in the capital structure of a company is the deductibility of interest, making debt the cheapest type of outside funding for most companies. An important disadvantage of debt, especially if there is managerial ownership, is the increasing risk that a company will go bankrupt. For the shareholders, there is also another problem: they want to make sure that the company uses the optimal amount of debt. Also in this case, the agency problem could be reduced by a blockholder. Since blockholders have stronger incentives to monitor and control the board of the firm, more debt financing is being used by a company than the managers would like (Fosberg, 2004).

Also the type of controlling shareholder could be important. Some companies, for example, have a government as important shareholder. Although this could be categorized as very concentrated ownership, the ultimate ownership is often very dispersed in practice. This is because government ownership is funded with money that belongs to the state as a whole and not to individuals (Denis & McConnell, 2003). As discussed before, the effect of blockholder equity ownership is uncertain: equity ownership can align the interest of the blockholder with the other shareholders, leading to common benefits. However, a blockholder can also control the firm and take actions for private benefits, which are not available for other shareholders. The evidence of the two different effects of ownership structure on firm value is mixed. Morck, Shleifer, and Vishny (1988) study the relationship between ownership structure and corporate performance and conclude that the alignment of interests between managers and shareholders dominates if there is inside ownership. However, Himmelberg, Hubbard, and Palia (1999) conclude that managerial ownership and firm performance are affected by the same characteristics and doubt the causal link between ownership and firm performance. Those studies only look for the link between managerial ownership and firm performance, but do not look for other types of (external) blockholders. Mehran (1995) studies the relationship between different types of blockholders and firm performance and does not find a significant relationship. Contradicting results have been found by Mikkelson and Ruback (1985). They conclude that the formation of a new blockholder leads to abnormal stock price increases. Overall, there is evidence for both a positive and negative relation between the type of blockholder and firm value for U.S. companies (Holderness, 2003). However, it is uncertain whether the same is the case for companies outside the United States.

In this theoretical framework, I will discuss the existing literature for the aforementioned aspects: (i) the effect of the presence of a blockholder on firm performance, (ii) the effect of the presence of a blockholder on the leverage ratio and (iii) the effect of different shareholder types on the firm performance and leverage ratio. Afterwards, I will explain the added value of this study to the current literature, as well as the hypotheses that will be examined in this study.

Firm performance

As stated, a lot of research has been done studying the relationship between equity ownership and firm performance. A distinction can be made between (i) firm value and (ii) firm performance and between listed and non-listed firms. Morck, Shleifer, and Vishny (1988) were the first to investigate the relationship between inside ownership and firm value.[1] They find that firm value as measured by Tobin's Q, increases on a small scale when examining a sample of Fortune 500 companies in 1980. However, this relationship is sometimes significant and sometimes insignificant, depending on the regression. McConnell and Servaes (1990) also examine the relationship between ownership concentration and Tobin's Q for companies listed at the New York Stock Exchange and American Stock Exchange and find the same results for inside ownership between 0 and 5 percent, although they do not find a significant relationship between an outside blockholder and firm value.

A large number of other studies have used the same method for different samples with Tobin's Q as main dependent variable (e.g. Kole (1995) and Kapopoulos & Lazaretou (2007)). However, those papers only study the effect of blockholders on firm value of listed companies. Mehran (1995) is one of the first authors using a different proxy for firm performance. As he explains in his paper, it could be argued that Tobin's Q is a better measure for the firm's growth opportunities than firm performance and uses the return on assets (ROA). On the other hand, it could also be argued that the ROA does not tell much about the economic rates of return (Benston, 1985). An argument for using the ROA-variable as performance measure is the fact that the ROA is often used to analyse the value added to the company by the CEO (Paul, 1992). The board will therefore make important decisions based on the effect on the ROA and their compensation. Although there is a scientific discussion about the use of those different proxies for firm performance, the results will on average not be affected by the choice of the proxy, because both variables are highly correlated (Landsman & Shapiror, 1995). Mehran (1995) does not find a significant relationship between firm performance and blockholders' stockholdings for both proxies of firm performance after examining 153 randomly-

[1] Inside ownership is defined as "shares owned by members of the board, the CEO and management" (Demsetz & Villalonga, 2001).

selected U.S. manufacturing companies in 1979-1980. He also does not find a signification relationship between firm performance and the type of outside blockholder.

Demsetz and Lehn (1985) use a different approach and studied the relationship between firm performance and inside ownership. They do not find a significant relationship between the ROA and the concentration of ownership, after a regression of the ROA on a number of variables, including the size of the largest shareholder. Demsetz and Villalonga (2001) do a similar research for a sample of 223 U.S. companies, but make ownership multi-dimensional and treat it as an endogenous variable. They do not find a significant relationship between ownership structure and firm performance and they conclude that ownership structure does not have significant impact on the firm performance. This is in line with the theory that diffuse ownership, while creating potential agency conflicts, also reduces some other problems which firms with a small number of shareholders face.

For American companies, the relationship between ownership structure and firm performance seems to be small at first sight. Studies for other parts of the world show mixed results. Claessens et al. (2002) disentangle the incentive and entrenchment effects of blockholders for 1301 listed companies of eight East Asian economies. They find a positive incentive effect and conclude that firm performance increases with the cash-flow ownership of the largest blockholder. However, Claessens et al. also find that firm performance decreases when the control rights of the largest shareholder exceed its cash-flow ownership, which is consistent with the entrenchment effect.

Górriz and Fumás (1996) argue that most empirical literature studying the relationship between ownership and firm performance focusses on the U.S. firms with dispersed share ownership, while this is not the case for European firms. A study on 135 listed companies from Spain shows that ownership structure is important even if the authors control for endogeneity, which is in contrast with the results of U.S. firms (De Miguel, Pindado, & De La Torre, 2004). Kapopoulos and Lazaretou (2007) try to investigate whether there is evidence to support the hypothesis that variation in ownership structures results in variation in firm performance using data of 175 Greek listed firms. Using both Tobin's Q and ROA as dependent variables, the authors find that a more concentrated ownership structure leads to higher firm profitability. Besides, Kapopoulos and Lazaretou find that higher firm profitability requires less diffused ownership. Alimehmeti and Paletta (2012) recently conducted a similar study for 203 listed firms in Italy for two periods: pre-crisis (2006-2007) and post-crisis (2008-2009). They also find a positive relationship between ownership concentration and firm performance, confirming the theory that higher concentration increases shareholder power and aligning the interests of managers and shareholders. However, the authors find changing results for 2008. For this time period, there is a negative relationship between ownership concentration and

firm value. Alimehmeti and Paletta believe that this changing relationship is due to the start of the financial crisis, which might have influenced the relationship because of the increasing importance of the expropriation effect[2] in comparison with the monitoring effect.

Less research has been done into the relationship between blockholders and firm performance for non-listed firms. This lack of research is probably because of missing data. Arosa, Iturralde and Maseda (2010) analyse the usefulness of blockholders as corporate governance mechanism to reduce the potential conflict of interest for non-listed SMEs in Spain and, in the case of family firms, look for a "family-effect". The authors do not find a relationship between blockholders and firm performance, regardless of whether the firm is family or non-family owned. Besides this, Arosa et al. do not find a significant relationship between ownership concentration and firm performance for 587 Spanish SMEs.

It appears that there are systematic differences between the shareholder base of U.S. firms and European firms if we look at the relationship between shareholder concentration and firm performance. Summarizing the mentioned literature, we can conclude that is has not been definitely established whether the impact of blockholders on firm performance is positive or negative (Holderness, 2003). Besides that, there could be some differences between SMEs and bigger companies. Finally, it is interesting to see whether the relationship between shareholder concentration and firm performance has remained the same after the financial crisis.

Firm leverage

Besides the relationship between shareholder concentration and firm performance, much research has been done into studying the relationship between shareholder concentration and firm leverage. For example, Stulz (1988) argues that high inside ownership should be associated with higher leverage, while Fosberg (2004) suggests the opposite. This could be the case, because the effect of ownership concentration on capital structure can be twofold. The presence of a blockholder reduces the agency costs and could lead to equity issuing. These shareholders, however, could be undiversified which may increase their aversion to debt. Besides, it is possible that one of the blockholders is a bank forcing the company to borrow from it (Rajan & Zingales, 1995).

Holderness and Sheehan (1988) find that firms with majority shareholders, and thus a more concentrated shareholder base, tend to have lower debt-to-asset ratios than similar-size firms with diffuse ownership (Holderness, 2003). Besides this, Holderness, Kroszner and Sheehan (1999) study 1500 publicly traded U.S. firms and find a significant negative relationship between inside ownership

[2] This is similar to the entrenchment effect explained earlier in this paper.

and leverage for 1995. Those two papers are contradicting with a paper written by Moh'd, Perry and Rimbey (1998). They examine the influence of ownership concentration on the capital structure of 311 U.S. firms over the period 1972-1989 and find that managers respond to variations in ownership structure. If the ownership of managers increases, the leverage of the company decreases, while the opposite is the case when the blockholder is an institutional investor. When outside ownership is diffuse, there is no relationship between those shareholders and the leverage of a company.

Céspedes, González and Molina (2010) examine the relationship between ownership concentration and leverage of companies for 806 companies from Latin American countries from 1996 through 2005. They find that, at high levels, ownership concentration has a positive impact on the leverage ratio, supporting the theory that companies with high shareholder concentration do not want to issue equity. The latter could lead to reduced power for the incumbent shareholders. At low levels of ownership concentration, Céspedes et al. find a significant negative relation with the leverage ratio. This is in line with the idea that if controlling the company is irrelevant, the shareholders have an aversion to debt.

Fosberg (2004) studies a sample of 142 of the largest U.S. firms from 1990 through 1996 and report results in line with the theory of Friend and Hasbrouck (1988), which states that managers have a personal incentive to use less than the optimal amount of debt, because of the risk of losing personal wealth. Fosberg concludes that the amount of debt is inversely related to the percentage of shares held by the manager. Besides this, he concludes that there is a direct and significant relationship between blockholder share ownership and a firms' debt-to-equity ratio. In addition to this, he finds that an increase in the number of shareholders leads to a smaller effect on the debt-to-equity ratio of the firm. These results show that blockholders will monitor the company and that blockholders could help to protect a firm.

Unfortunately, there is less research available investigating the link between equity ownership and the debt level of a firm for companies in West-Europe. One of the most comprehensive papers is written by Paligorova (2010). The author uses a dataset of 13.486 listed firms from 38 different countries during the period from 2003 to 2006. Among those 38 countries are various Western European countries such as the United Kingdom, Germany, France and the Netherlands. He finds a positive and significant correlation between ownership and risk-taking decisions, which could lead to higher leverage ratios. Besides that, Paligorova points to the importance of different legal systems in different countries. Countries with better protection of shareholder rights are associated with more risk-taking leading to higher levels of debt, while countries with strong protection of creditor rights are associated with less risk-taking decisions.

Although the existing studies do not provide a clear outcome, most papers show a positive relationship between shareholder concentration and the debt level of a company. Besides that, an import finding is that managerial ownership could lead to a lower and thus suboptimal level of debt. However, little research has been done on this relationship for Western European countries and especially non-listed companies in Western Europe.

Shareholder type

In the previous part, the main issue discussed is whether shareholder concentration affects firm performance and the leverage ratio. Besides the question whether shareholder concentration is important, it is interesting to study the question whether the type of shareholder is important for firm performance and the leverage ratio.

Jensen and Meckling (1976) already argued that managerial-ownership could reduce incentives to engage in sub-optimal activities and this could help to align the interest of the other shareholders and the manager, leading to higher firm performance and (eventually) a higher debt-level. However, there could be other external equity holders who can mitigate agency conflicts because of their incentives to monitor the management. Examples of external shareholders could be a bank, a corporation, foundation, a family, a private equity firm, a manager, an institutional investor or a public authority.

It could be argued that some of those shareholders have more experience and are therefore better monitors, while other shareholders do not have incentives to monitor intensively. For example, private equity firms and venture capitalists can add value to a firm directly due to specific skills or experience, leading to better monitoring and firm performance. Institutional investors also have much experience, which could lead to better firm performance. However, it is questionable whether institutional investors have sufficient incentives to monitor. On the other hand, a public authority and foundations often have less experience with monitoring which could be an indication for worse firm performance. It may differ for managers and families, as they may have experience, but this is not necessarily the case.

When looking at current research on this topic, the results are varied. Looking, for example, at family firms, we see a unique shareholder with a different incentive structure: concerns over family reputation could lead to a reduction of outside debt (Anderson, Mansi, & Reeb, 2003). This in line with several other studies, including Anderson and Reeb (2003) who examine the relation between family ownership and firm performance for 403 Standard & Poor 500 firms. They find that family firms are significantly better performers than nonfamily firms measured by the ROA. Maury (2006)

conducts a similar study for Western European companies and makes a distinction between active and passive family control. Studying 1672 companies, the author finds effects of family control that are similar to those found for U.S. firms: active family ownership improves firm performance, but passive family ownership does not affect firm performance in comparison with firms where the blockholder is not a family. However, it seems on average that the net effect of family ownership on firm performance will be positive (Margaritis & Psillaki, 2010).

Studies for institutional investors show different results. Institutional investors could even cooperate with the management, which could lead to a reduction of the firm performance (Margaritis & Psillaki, 2010). However, when examining the impact of institutional ownership on firm performance for 83 Standard & Poor 100 firms, Cornett, Marcus, Saunders and Tehranian (2007) find a significant positive relationship between the concentration of institutional investors and firm performance. This is due to the fact that the authors only find a significant relation for institutional investors who do not have a business relation with the firm. These results suggest that institutional investors with potential relations with a company are compromised as monitors of the company.

A third important shareholder could be a public authority like the state, government or municipality. Claessens, Djankov, Fan and Lang (1998) examine firms in the United States, Japan and other East Asian countries and conclude that there is a significant and positive relationship between governmental ownership and firm performance. One of the arguments supporting this result is the theory that private investors try to expropriate the income and assets from the minority shareholders, while this is not the case for the government. Chen, Firth and Xu (2009) also investigate the relationship between ownership structure and firm performance for listed firms in China. Besides the conclusion that ownership concentration is positively related to the firm performance, the authors find that firms with a private investor as most important shareholder are not superior to firms owned by the state. An important question remains whether the same conclusion can be drawn for Wester European firms: in countries like the Netherlands and Germany, the government often only acts as a shareholder when private markets will not suffice (Poterba, 1996).

Bank involvement could also have an impact on firm performance. Morck, Nakamura and Shivdasani (2000) study the effect of banks as important shareholders on the firm performance for 373 listed firms in Japan. They argue that there will be a difference between banks as creditor of a company and banks as shareholder: equity ownership could give banks a considerable voice without aligning the interests with those of other shareholders, leading to a reduction in firm performance. If the incentives of the bank and other shareholders are closely aligned, this could improve firm

performance. Morck et al. conclude that the relationship between bank ownership and firm performance varies over time, but is in general positive when the ownership is high. The same is the case for large public companies in Germany, according to Gorton and Schmid (2000). They find that control rights for banks from equity ownership significantly improve firm performance beyond what nonbank blockholders can achieve.

A last important category of important blockholders are private equity funds and hedge funds. Those investors are on average more likely to actively monitor the management, while there is on average a positive relationship between actively monitored firms and firm performance (Clifford & Lindsey, 2016). Kirchmaier and Grant (2005), for example, take private equity ownership and banking shareholders as one category and find a significant and positive relationship between this type of ownership and firm performance. Although there is a lot of research available about the effect of private equity on operational performance of firms, little research has been done on the effect of private equity on firm performance in the context of shareholder concentration.

Hypotheses

From the discussed literature, it seems that there are differences in shareholder concentration between different countries. Especially the differences between U.S. and European firms are important: U.S. companies have a higher number of shareholders and thus lower shareholder concentration than European firms (Gedajlovic & Shapiro, 1998). This paper focusses on companies based in Belgium, Germany and the Netherlands. It can therefore be assumed that the influence of large shareholders in those companies is larger than for the results discussed for U.S. companies.

Following the theory that a higher concentration of ownership could lead to more intensive monitoring of the management of the company, I expect a positive relationship between shareholder concentration and firm performance for all types of companies in Belgium, Germany and the Netherlands. Therefore, hypothesis 1 will be as follows:

- Hypothesis 1: *There will be a positive link between shareholder concentration and firm performance.*

Hypothesis 2 relates to the type of shareholder that has the biggest stake in a company. As already mentioned before, there are different types of shareholders with more experience, better monitoring-systems and other skills, which could lead to better firm performance. Especially private equity firms and institutional investors have much experience, which could lead to better monitoring and better firm performance. The interest of families or managers and the company is, in most cases, better aligned, which could also lead to better firm performance. On the other hand is the public

authority. As discussed, in countries like Germany and the Netherlands, the government will only act as a shareholder if private markets will not suffice. It is therefore likely that the performance of such companies is worse than the performance of comparable companies. Hypothesis 2 will be:

- Hypothesis 2: *A family, manager, private equity or venture capital fund as most important shareholder has a positive effect on firm performance, while a public authority as blockholder has a negative effect on firm performance.*

Besides focussing on the relation between shareholder concentration, the type of shareholder and firm performance, I will look for the effect of shareholder concentration and the type of shareholder on the leverage ratio of companies. The relation between these factors can be twofold: first, high shareholder concentration could reduce agency costs between managers and shareholders, facilitating equity issues. Besides, these shareholders may be undiversified, increasing their aversion to debt. However, large shareholders can also use their power to force the company into borrowing. Existing studies do not provide a clear answer to the question whether there is a positive relationship between shareholder concentration and the leverage ratio of a company, although most papers show a positive link. Whether this also applies to non-listed companies based in Belgium, Germany and the Netherlands is still uncertain. Hypothesis 3 is as follows:

- Hypothesis 3: *There will be a positive link between shareholder concentration and the leverage ratio.*

For the last hypothesis, I will look for the difference in shareholder type and the leverage ratio of companies. For example, it is theorized that managerial ownership leads to a lower and suboptimal debt-level. This occurs, because managers have invested much of their income in the company, making them reluctant to use the optimal amount of debt because of the additional bankruptcy risk: the management runs a relatively high risk when the company goes bankrupt. This is less important for other types of shareholders. On the other side, there are types of shareholders, such as banks, which might have an interest in reducing the amount of outside sourcing of the company, forcing them into borrowing. The last hypothesis will therefore be:

- Hypothesis 4: *The management as most important shareholder has a negative effect on the leverage ratio of a company, while there is a positive relation between a bank as blockholder and the leverage ratio.*

III. Data and sample selection

The primary sample of this paper consists of all firms in Belgium, Germany and the Netherlands for the period 2009 – 2017 extracted from the *Bureau van Dijk*'s *Orbis* database. The start of the time period is therefore during the crisis and will be taken into account when performing robustness checks. Banks and insurance companies are excluded from the sample, because a high leverage ratio could be normal for these types of firms and does not necessarily have the same meaning as for nonfinancial firms, where a high leverage ratio could lead to financial distress (Fama & French, 1992).

The most important variable is the BvD Independence indicator as a proxy for the ownership structure of a company. This indicator included in the *Orbis* database could characterize the degree of independence of a company with regard to the shareholders. *Orbis* makes a distinction between 5 different qualifications: A, B, C, D and U.[3] A company is marked with indicator A if none of the recorded shareholders has more than 25% of direct or total ownership over the company. This is further qualified as A+, A and A-, whereby A+ is a company with 6 or more identified shareholders, A is a company with 4 or 5 identified shareholders and A- is a company with 1 to 3 identified shareholders. Indicator B is "*attached to any company with a known recorded shareholder none of which with an ownership percentage above 25%.*" Indicator C is assigned to companies for which there is a recorded shareholder with a total or a calculated total ownership over 50%, while indicator D is allocated to any company with a recorded shareholder with a direct ownership of over 50%. The last category, companies labelled with the U-indicator, consists of companies with an unknown degree of independence. I select all the firms marked with indicator A (A+, A and A-) as starting point for independent firms and select firms with indicator C and indicator D as dependent firms to make a distinction in their ownership structure. Because *Orbis* only shows the latest BvD Independence indicator, I use the BvD independence update to identify the year of the last change with an impact on the ownership structure of the company. Observations before the last year of the BvD independence update are dropped.

For the control variables, which will be discussed in the methodology section, at least one value must be present in the dataset for the period 2009 – 2017. This is, among all, the case for shareholder funds and the number of employees. For the main dependent variables, which will be the performance measure and leverage ratio, all missing observations are dropped from the sample. Lastly, I select all possible categories in terms of company size: small companies, medium sized companies, large companies and very large companies, ending up with 14.006 companies and 82.947 unique firm-year observations.

[3] Definitions for those indicators are provided in the Help for BvD Ownership Database.

Summary statistics

Table I presents summary statistics for all the firms after trimming all relevant variables at the upper and lower one-percentiles to mitigate the effect of outliers and eradicate errors in the data. It immediately becomes clear that large companies influence the statistics, since the average value is far above the median value for all variables.

The median firm has total assets of 13.84 million U.S. Dollar. Long-term debt is only 1.37 million U.S. Dollar for the median company, while current liabilities are relatively high with an amount of 4.51 million U.S. Dollar. Average sales are 282 million U.S. dollar, while the median company has 26 million U.S. Dollar of sales. Net income is, on average, positive and is for the median company 0.35 million U.S. Dollar. The median company has 56 employees, while the average for the 25th percentile is only 15 employees. Furthermore, it is noteworthy that all variables measuring the performance of the companies are positive: the median return on equity is 8.87%, while the ROA is 3.32%. Lastly, it is interesting to see that the average leverage ratio, calculated following Lemmon, Roberts and Zender (2008), is around 53%.

Table I
Summary Statistics

The sample consists of all nonfinancial firms in the *Orbis* database from 2009 to 2017 based in Belgium, Germany and the Netherlands. The table presents variable averages, the 25th percentile, median, 75th percentile and standard deviations for the entire sample. The values for total assets, non-current liabilities, current liabilities, sales, net income and shareholder funds are in millions of U.S. dollars. Total assets are the sum of fixed and current assets. Net income is the value for profit and loss after tax plus other profit and losses. Return on equity is the ratio of total net income divided by shareholder funds, return on assets is the ratio of net income divided by total assets. Book leverage is total debt (non-current liabilities + current liabilities) divided by total assets.

	All companies				
Variable	Mean	0.25	Median	0.75	(*SD*)
Total assets	274.54	4.14	13.84	50.04	(3746.77)
Non-current liabilities	99.98	0.12	1.37	8.78	(1609.95)
Current liabilities	77.60	1.20	4.51	15.15	(1218.10)
Sales	282.40	7.87	26.10	81.96	(3112.44)
Net income	9.32	0.02	0.35	1.79	(176.47)
Shareholder funds	96.97	0.93	4.44	19.42	(1132.47)
Employees	624.53	15.00	56.00	186.00	(7620.50)
Return on equity	15.01	1.73	8.87	21.25	(43.88)
Return on assets	3.96	0.43	3.22	7.76	(8.88)
Book leverage	0.61	0.41	0.62	0.80	(0.28)
Observations	82,947				

If a distinction is made between the sizes of companies, we mainly see differences for the total variables, while the ratios remain the same for the different categories. *Orbis* has categories for small, medium, large and very large companies based on operating revenue, total assets and employees. The results of table II are based on these categories.

Logically, the variables for absolute values increase per category, since the companies are classified in a category based on these values. More interesting are the values for the ROE and book leverage which remains the same over the different categories: based on these statistics, the size of a company does not have a big impact on the performance for this dataset. Lastly, the companies are well distributed among the different size categories.

Table II
Size of companies

The sample consists of all nonfinancial firms in the *Orbis* database from 2009 to 2017 based in Belgium, Germany and the Netherlands. The table presents variable averages and median for four different categories of companies. The values for total assets, non-current liabilities, current liabilities, sales, net income and shareholder funds are in millions of U.S. dollars.

	Mean [Median]			
Variable	Small	Medium	Large	Very Large
Total assets	8.40	6.40	34.37	1239.04
	[0.67]	[4.56]	[21.02]	[171.10]
Non-current liabilities	2.36	1.36	8.35	461.10
	[0.02]	[0.32]	[2.30]	[29.21]
Current liabilities	1.17	2.53	10.77	347.86
	[0.23]	[1.56]	[6.46]	[42.38]
Sales	1.35	7.72	38.48	1035.00
	[0.67]	[5.08]	[29.21]	[193.29]
Net income	0.11	0.21	1.18	42.15
	[0.01]	[0.12]	[0.70]	[4.54]
Shareholder funds	4.87	2.50	15.25	430.13
	[0.21]	[1.48]	[7.10]	[61.63]
Employees	5.00	34.20	136.99	2607.07
	[4.00]	[21.00]	[79.00]	[462.00]
Return on equity	13.55	15.77	16.47	11.97
	[6.93]	[8.65]	[9.65]	[8.59]
Return on assets	2.81	3.71	4.52	3.79
	[2.57]	[2.95]	[3.60]	[3.13]
Book leverage	0.61	0.61	0.60	0.60
	[0.61]	[0.63]	[0.62]	[0.62]
Observations	9655	21,885	34,154	17,253

As already mentioned, the most important variable of this paper is the BvD Independence Indicator, since I will use this indicator as a proxy for the ownership structure of a company. This indicator characterizes the degree of independence of a company with regard to the shareholders. Table III presents the distribution of companies among the different categories. From the table, we could see that the majority of companies is owned by an ultimate owner, displayed by indicator C or D. 7.3% of the companies in the used sample are classified as independent and do not have a shareholder owning more than 50% of the shares.

Another noteworthy thing is the distribution of companies among the different countries. Companies based in Belgium and Germany represent almost 98% of the sample. This is probably due to the fact that it is legally not necessary to publish the ownership structure of a private company in the Netherlands. Because of that, *Orbis* could not assign an indicator to those companies.

The last point to be considered is the type of shareholder. In the majority of cases, *Orbis* shows the type of controlling shareholder. A controlling shareholder means a shareholder who owns more than half of the shares or majority of the outstanding shares in a company. However, *Orbis* does not give information about all the shareholders of a company. It is therefore only possible to compare companies with a blockholder and I will drop the observations for companies without a controlling shareholder for testing hypothesis 2 and 4. Besides that, *Orbis* does not provide information about the controlling shareholder for some companies at all. These observations will be dropped as well when testing hypothesis 2 and 4. This leads to a sample of 12.870 firms and 76.760 unique firm-year observations.

Table III
Independence indicator per country

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. Indicator A identifies independent companies with known recorded shareholders, none of which having more than 25% of direct or total ownership. Indicator C is attached to companies with an (unknown) ultimate owner and companies labelled with indicator D have a recorded shareholder with a direct ownership of over 50%.

Independence Indicator	Belgium	Germany	Netherlands	**Total**
A+	115	305	33	453
A	22	5	0	27
A-	585	14	12	611
C	605	4	4	613
D	7810	4220	272	12,302
Total	9137	4548	321	14,006

Orbis provides 11 different types of shareholders, namely: corporate, public authority, family, bank, financial company, management, insurance company, mutual and pension fund, private equity fund, venture capital fund and foundation. For simplicity reasons, I combine the category for banks and financial companies, combine the category for insurance companies, mutual funds and pension funds and lastly, combine the category for private equity and venture capital, creating a total of 8 categories.

Table IV shows the distribution of controlling shareholders among the different categories and among the different countries. The number of companies per type of controlling shareholder varies greatly, although the corporation as controlling shareholder is represented the most. Besides, 2257 of the 12,870 companies have a family as controlling shareholder, which is the second largest group. Managers as controlling shareholders and private equity and venture capital funds are worse represented with respectively 17 and 78 shareholders in total. It is important to take this into account during the results, since those companies do not have to represent companies with a similar shareholder and the results do not have to be true in general.

Table IV
Distribution of controlling shareholders

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. I excluded firms without a controlling shareholder and firms for which the type of controlling shareholder is unknown. The shareholder category for finance consists of banks and financial firm, the category for institutional investors consists of insurance companies, mutual funds and pension funds.

Shareholder type	Corporate	Public	Finance	Family	Manager	Instit.	PE & VC	Found.	**Total**
Belgium	6177	187	560	1056	13	159	64	159	8375
Germany	1948	666	129	1186	4	75	14	198	4220
Netherlands	131	4	6	15	0	6	0	113	275
Total	8256	857	695	2257	17	240	78	470	12,870

IV. Methodology

In this thesis, I will first examine the relationship between the ownership structure, shareholder type and firm performance. After studying this relationship, the impact of the ownership structure and shareholder type on the leverage ratio will be examined. To test the aforementioned hypotheses, a number of regressions will be constructed with different variables. In this section, the regressions models and choices for the different variables will be explained in more detail.

Firm performance

Hypothesis 1 states that there is a positive relationship between shareholder concentration and firm performance. I will study this relationship using an ordinary least square regression for the following equation:

$$Firm\ perfomance = \alpha + \beta_1 * Shareholder\ con_i + \beta_2 * X_{it} + \nu_i + \omega_t + \varepsilon_{it} \quad (1)$$

In this paper, I will use different measurements for firm performance. One of the most common measurements for firm performance used in the existing literature is the ROA (e.g. Demsetz & Villalonga (2001), Maury (2006) and Aggarwal, Erel, Ferreira, and Matos (2011)). The ROA indicates the profitability of the company relative to the assets and gives an indication about the efficiency of the company. There are different ways to measure the ROA: it is possible to use the EBITDA divided by the book value of total assets or to use net income divided by the book value of total assets. The second method is more commonly used (Lehmann & Weigand (2000) and Thomsen, Pedersen, and Kvist (2006)), because it shows how efficient the management exploits its assets to generate earnings and is therefore the variable also used in this thesis. The second variable used for firm performance is the return on equity (ROE). The ROE is calculated by dividing the net income by the shareholder's equity (Van Ees, Postma and Sterken (2003) and Maury (2006)) and shows the growth rate of the value of the company. In this way, it is possible to analyse how efficient the management allocates the money of the investors. Using those two dependent variables gives a more nuanced view of firm performance. Another dependent variable often used to measure firm performance is Tobin's Q (Demsetz & Lehn, 1985). Because there are many non-listed companies in the sample I will use, this variable is not relevant for this thesis.

The main independent variable in equation (1) is shareholder concentration. I will use two different proxies for shareholder concentration. The first variable is a blockholder-dummy, which takes on the value 1 if a company is labelled with the BvD Independence Indicator "C" or "D" and takes on the value 0 if a company is labelled with the indicator "A". If a company is directly or indirectly owned by one shareholder, label C or D will be assigned to this company and it is therefore a reliable measure for shareholder concentration.

The second proxy for shareholder concentration is the number of shareholders in a company. *Orbis* has its own ownership database using different sources to archive data. If the number of shareholders is known to *Orbis*, this number is shown in the company profile. Although the number of shareholders is not displayed for all companies and the different percentages for all shareholders are unknown, this variable could give an indication of shareholder concentration: more shareholders,

all else equal, means less shareholder concentration. Besides, an increasing number of shareholders could lead to a free rider problem: the costs of monitoring are privately, while the benefits of monitoring are shared among all shareholders. This could lead to a negative relation between the number of shareholders and firm performance.[4] However, there could also be a positive relation between the number of shareholders and firm performance, simply because many investors would like to invest in a profitable and sustainable company.

In equation (1), X is a set of control variables. Following the paper of Morck, Shleifer and Vishny (1988), I control for firm size and debt ratio. Firm size is measured by taking the natural logarithm of the book value of total assets in order to eliminate scale effects (Alimehmeti & Paletta, 2012). Besides controlling for firm size, the leverage ratio of a company could affect firm performance: The debt structure could influence the agency problem and the ownership structure. The leverage ratio could also be positively correlated with the firm's credit risk and the financial risk (Krivogorsky, 2006). I will divide the total debt of a company by the total assets to measure the leverage ratio and control for those two factors. Another important variable is inside ownership: this dummy-variable takes on the value 1 if one of the shareholders of the company is also the manager. The discussed convergence-of-interest theory states that firm performance will increase if there is managerial ownership, since agency costs will decrease when the manager is more involved in the company (Farrer & Ramsay, 1998). *Orbis* displays information about the question whether one of the shareholders is also in the management of the company. Two other variables to control for firm size are the average growth of assets and the number of employees (Carpenter, 2002). I will calculate the average growth of assets as the annual percentage change in total assets, following Titman and Wessels (1988) and Jensen, Solberg and Zorn (1992). I also add a variable for sales, taking the logarithm of total sales, in line with Lemmon and Zender (2007). Lastly, the set of control variables contains a variable for the different countries. It could be that differences between the countries, for example, caused by the influence of the legal systems on shareholders affect the firm performance in different ways. I will use a dummy-variable for all three countries.

Industry fixed effects are accounted for by ν, while ω account for time fixed effects, following Lemmon, Roberts and Zender (2008). ε is a random error term assumed to be possibly heteroskedastic and correlated within firms (Petersen, 2009).[5]

[4] However, it is difficult to conclude anything about the free rider problem, since the distribution of shares is unknown.

[5] The construction of all of the variables used is detailed in the Appendix.

As discussed, the type of shareholder could also affect firm performance. To examine this potential relationship, the following regression will be used to test hypothesis 2:

$$Firm\ perfomance = \alpha + \beta_1 * Type_i + \beta_2 * X_{it} + \nu_i + \omega_t + \varepsilon_{it} \quad (2)$$

As was the case for regression (1), firm performance will also be measured by the ROE and ROA for this regression. A new and relevant independent variable is the shareholder type. The shareholder type-variable will be a dummy-variable which takes on value 1 for each type of shareholder. The set of control variables, X, will be same as for regression (1): firm size, debt level, inside ownership and a country-variable. ν will account for industry fixed effects and ω for time fixed effects. Lastly, ε is the random error term. I will perform the regression without a constant, so the impact of all 8 types of shareholders will be visible. After the regression, I will do a contrast analysis to test the theoretical predictions about differences between different types of shareholders versus the mean.

Leverage ratio

The second part of this thesis is about the relationship between shareholder concentration and the leverage ratio. As discussed in the theoretical framework, I expect a positive link between shareholder concentration and the leverage ratio. I will do an ordinary least square regression to test this hypothesis:

$$Leverage = \alpha + \beta_1 * Shareholder\ concentration_i + \beta_2 * X_{it} + \nu_i + \omega_t + \varepsilon_{it} \quad (3)$$

Leverage will be calculated the same way as described before, following Lemmon, Roberts and Zender (2008) and Alimehmeti and Paletta (2012). The main independent variable is again shareholder concentration, measured by the BvD Independence Indicator and the number of shareholders.

X is a set of control variables, which differ slightly from the set of control variables used for regression (1) and (2), because other factors influence the leverage ratio of a company. Previously identified variables that are relevant determinants for the leverage ratio are profitability, growth and industry indicator variables (e.g. Rajan and Zingales (1995) and MacKay and Philips (2005)). Besides those factors, I will control for firm size and the possibility of inside ownership. Lastly, ν will again account for industry fixed effects, ω for time fixed effects, while ε is a random error term assumed to be possibly heteroskedastic and correlated within firms.

Besides looking for the relationship between shareholder concentration and firm leverage, I will examine the relationship between shareholder type and the leverage ratio. The last model will be:

$$Leverage = \alpha + \beta_1 * Type_i + \beta_2 * X_{it} + \nu_i + \omega_t + \varepsilon_{it} \quad (4)$$

The leverage ratio will be measured in the same way as for regression (3). The new independent variable is shareholder type, which is a dummy-variable for each type of shareholder displayed in table 4. The set of control variables, X, will be same as for regression (3): firm size, inside ownership, profitability, total sales, growth and industry variables.

V. Results

This section will start with an analysis of the correlation matrix of the variables I will use for the discussed regressions. This check is performed to avoid multicollinearity. Multicollinearity arises when the degree of correlation between independent variables is high enough to cause problems in the model and could affect the values found in the regressions. Afterwards, I will perform the regressions as mentioned during the methodology and discuss the results.

Correlation analysis

Table V presents the results of the correlation matrix between the independent variables and the ROA, ROE and leverage ratio, the main dependent variables. Looking at the table, a small and positive correlation between the blockholder-variable and the performance-measures is observable. Besides this, the number of shareholders and blockholder correlate negatively. This seems logical, given the fact that an increasing number of shareholders leads to a lower chance of the presence of a blockholder. The ROA and ROE have a correlation of 0.483, which is an indication of some correlation. However, it is still possible to use both measures as proxy for firm performance, since it is not a very strong correlation.

There is a strong correlation between the variables sales, employees and firm size. This could be because all three variables are a proxy for the organizational size of a company (Carpenter, 2002). Adding all these variables at the same moment could affect the coefficients of the variables during the regression. It is therefore important to take this into account when discussing the results. The variables for sales and employees will only be added in the last regression to see whether this has an effect.

Table V
Correlation matrix of variables used

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. I excluded firms without a controlling shareholder and firms for which the type of controlling shareholder is unknown. The table presents the correlation between the different variables used in the regressions.

Variables	ROA	ROE	Blockholder	Firm size	Leverage	Insider	Growth	Sales	Employees	No. shareholders
ROA	1.000									
ROE	0.483	1.000								
Blockholder	0.029	0.027	1.000							
Firm size	-0.049	-0.072	-0.062	1.000						
Leverage	-0.222	0.144	0.024	-0.067	1.000					
Insider	0.031	0.012	0.073	0.006	-0.001	1.000				
Growth	0.142	0.078	-0.002	0.041	0.039	0.023	1.000			
Sales	0.051	0.029	-0.016	0.819	0.073	0.065	0.039	1.000		
Employees	-0.012	-0.018	-0.031	0.669	-0.013	0.066	0.008	0.765	1.000	
No. of shareholders	0.009	0.005	-0.412	0.167	-0.024	-0.026	0.002	0.142	0.151	1.000

Firm Performance

The results from regression (1) using the ROA and ROE are presented in table VI. The main independent variable is the dummy-variable blockholder which takes on value 1 if the company is controlled by a major shareholder. The first column presents the results for a model consisting of this blockholder-dummy, while controlling for the size and leverage ratio of the company. These last two variables are the most common variables used by several authors (e.g. Mehran (1995) and Demsetz & Villalonga (2001)). As can be seen, all three variables are significant at the 1%-level and the blockholder-dummy has the expected sign: a major shareholder positively influences the ROA of a company. Firm size has a negative effect on the ROA, which is contradicting with, for example, a study of Hall and Weiss (1967). However, other studies show that the size of a firm could influence the ROA and ROE in some cases, but does not have to influence the ROA and ROE in all industries (Marcus, 1969). This could be the reason for the negative sign. The coefficient for leverage ratio is the greatest and also negative in relationship with the ROA, which is in line with several studies (e.g. Abor (2005), Shubita & Alsawalhah (2012) and Dogan (2013)).

Next, I incorporate year and industry fixed effects. The blockholder-variable is still positive and significant, while the variable for leverage and firm-size is still significant and negative. The R^2 increases from 0.06 to 0.15, which is an indication that time and industry specific effects explain an important part of the variation in the ROA.

For the third regression, I incorporate two other control variables: a dummy-variable if the manager owns shares and a variable for growth. As discussed in the theoretical framework and methodology, it could be argued that information asymmetry and agency costs will be reduced if a shareholder is also the manager of the firm, leading to better firm performance. As table VI shows, the coefficient for insider-ownership is positive, but not significant. The variable for firm growth is positive and significant at the 1%-level which is in line with several other studies (e.g. Maury (2006) and Krivogorsky (2006)). I also add country fixed effects to the model. The blockholder-dummy is still significant at the 1%-level, but the coefficient decreases slightly.

In the last regression, sales and the number of employees are added to the model. As discussed earlier, those variables are highly correlated with firm size. Both sales and the number of employees are significant at the 1%-level and seem to affect the coefficient of firm size, which becomes much greater. Interesting is the coefficient of the blockholder-dummy which is 0.61, smaller than the coefficients of the added control variables, but still significant at the 1%-level. All the control variables used in the first three regressions are also significant, while the R^2 is 0.21.

Table VI
The effect of the presence of a blockholder on firm performance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (1). All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to two decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Return on Assets				Return on Equity			
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Blockholder	0.95*** (3.82)	0.94*** (3.70)	0.80*** (3.21)	0.62*** (2.65)	3.31*** (3.46)	2.52** (2.54)	2.06** (2.09)	1.59 (1.64)
Size	-0.27*** (-7.63)	-0.17*** (-4.05)	-0.33*** (-7.69)	-1.79*** (-22.72)	-1.58*** (-9.77)	-1.34*** (-6.50)	-1.82*** (-8.52)	-5.23*** (-13.90)
Debt	-7.34*** (-27.35)	-8.85*** (-31.82)	-9.18*** (-33.59)	-10.55*** (-38.91)	22.51*** (17.42)	16.60*** (12.66)	15.78*** (12.02)	12.58*** (9.41)
Insider			0.10 (0.47)	-0.09 (-0.43)			-0.07 (-0.07)	-0.51 (-0.54)
Growth			8.06*** (27.72)	8.14*** (28.65)			20.40*** (14.92)	20.50*** (15.10)
Sales				2.33*** (24.49)				5.61*** (12.46)
Employees				-0.66*** (-9.30)				-1.74*** (-5.04)
Country-FE	No	No	Yes	Yes	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
R^2	0.06	0.15	0.18	0.21	0.03	0.11	0.12	0.13
Obs.	48,555	48,555	48,555	48,555	48,171	48,171	48,171	48,171

Columns 5 to 8 of table VI show the results from estimating equation (1) using the ROE as proxy for firm performance. The blockholder-variable is significant at the 1%-level for regression 5, while size has a negative effect on the ROE. Interesting to notice is the changed sign for the coefficient of leverage. It could be argued that high agency costs lead to over-investment or empire building: managers might have a tendency to invest more than optimal for the shareholders. Increasing leverage leads to high interest payments and reduces free cash flows (Myers, 2003). This could have a positive impact on the ROE. The higher interest payments, however, could lead to a reduction in net income. If, at the same moment, the assets of a company grow, this could lead to a negative effect on the ROA and a positive effect on the ROE. Looking at the other regressions, it is striking to conclude that the blockholder-variable does not remain significant. While it is significant at the 5%-level for regression 6 and 7, it becomes insignificant for regression 8. This could be due to the high

correlation between firm size, sales and number of employees. When performing regression 8 without the employees-variable, the blockholder-dummy becomes significant at the 10%-level.

Number of shareholders

As discussed in the methodology, the second proxy I will use for shareholder concentration is the number of shareholders in a company. *Orbis* uses different sources to receive the number of shareholders. Table VII presents the results of equation (1) using the number of shareholders as a proxy for shareholder concentration and the presence of a blockholder. As could be seen, the number of shareholders does not have a significant effect on the ROA for all regressions.

Table VII
The effect of the number of shareholders on firm performance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (1). All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Return on Assets				Return on Equity			
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No. of shareholders	0.02 (1.39)	0.02 (1.35)	0.01 (1.06)	0.01 (1.17)	0.14*** (2.76)	0.11*** (2.60)	0.10** (2.35)	0.11** (2.49)
Size	-0.29*** (-8.01)	-0.19*** (-4.34)	-0.35*** (-7.91)	-1.81*** (-22.59)	-1.70*** (-10.24)	-1.43*** (-6.80)	-1.90*** (-8.74)	-5.31*** (-13.92)
Debt	-7.32*** (-27.21)	-8.84*** (-31.71)	-9.18*** (-33.46)	-10.55*** (-38.78)	22.68*** (17.48)	16.72*** (12.70)	15.91*** (12.08)	12.71*** (9.48)
Insider			0.16 (0.74)	-0.04 (-0.21)			0.13 (0.14)	-0.34 (-0.35)
Growth			8.05*** (27.62)	8.13*** (28.55)			20.38*** (14.87)	20.49*** (15.05)
Sales				2.35*** (24.25)				5.67*** (12.43)
Employees				-0.66*** (-9.32)				-1.79*** (-5.15)
Country-FE	No	No	Yes	Yes	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
R^2	0.06	0.15	0.18	0.21	0.03	0.11	0.12	0.13
Obs.	48,313	48,313	48,313	48,313	47,928	47,928	47,928	47,928

The number of shareholders does not provide information about the presence of a blockholder, but could give an indication of whether a blockholder is present and about shareholder concentration. Although the correlation matrix displays a negative correlation between the number of shareholders and the presence of a blockholder, there is no significant relationship between the number of shareholders and the ROA. There is, however, a positive and significant effect of the number of shareholders on the ROE. Apparently, there is a link between the number of shareholders and the return on equity to a certain extent. The reason for this can be twofold. Firstly, the number of shareholders does not need to say anything about the presence of a blockholder: it is possible that there are five shareholders, with one shareholder owning more than 50% of the shares. Another possibility is a company with five shareholders, all owning 20% of the shares. Besides, the positive relation could be due to the "image" of the company. As discussed in the methodology, it could be that many investors want to participate, simply because it is a good company. To further study the reason for those results, I will do a number of regressions with an interaction effect between the number of shareholders and the presence of a blockholder during the robustness checks.

Shareholder type and firm performance

Besides the link between shareholder concentration and firm performance, I will study the effect of different types of shareholders. The results of equation (2) are displayed in appendix A, while the differences between different types of shareholders are shown in table VIII.

As discussed in the methodology, I will look for the differences between types of shareholders and the mean, since it is interesting to see how they deviate from that.[6] Especially family and public authority are types of shareholders having an impact on the ROA: family is in regression 1 to 4 positive and significant at the 1%-level, while there is a negative and significant relation between a public authority and the ROA, in line with hypothesis 3.[7] However, there is no significant relation between a private equity or venture capital fund and the ROA, while the same is the case for the relationship between the manager and the ROA.

When looking at the impact of the type of shareholder on the ROE, we see that the results slightly differ. While the family-variable is still positive and significant and the public authority has a negative and significant impact on the ROE, the coefficients for corporate investors, foundations and institutional investors are significant now. Institutional investors have on average a much higher ROE,

[6] The results of regression (2) are in line with previous findings, although I find a significant and negative relation between insider-ownership and the ROA and ROE.

[7] A reason for the negative link between a public authority and firm performance could be that the government often only acts as a shareholder when private markets will not suffice in Western-Europe.

while companies with a foundation as controlling shareholder have a much lower ROE. The coefficient for corporate shareholders is also significant and negative, but much smaller.

Table VIII
The effect of different types of blockholders on firm performance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. I excluded firms without a controlling shareholder and firms for which the type of controlling shareholder is unknown. The table presents the contrasts involving the dummy-variables for different types of shareholders from the panel OLS regressions as discussed in equation (2). All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Return on Assets				Return on Equity			
Contrast vs. mean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Corporate	0.08 (1.55)	-0.09* (-1.66)	-0.08 (-1.22)	-0.15** (-2.49)	0.35 (1.48)	-0.49** (-1.98)	-0.59** (-1.97)	-0.78*** (-2.61)
Financial	-0.01 (-0.02)	0.47 (1.53)	0.49 (1.62)	0.49* (1.70)	-1.22 (-0.96)	0.98 (0.74)	0.91 (0.69)	0.90 (0.69)
Foundation	-0.46 (-1.53)	0.21 (0.70)	-0.07 (-0.22)	-0.24 (-0.78)	-3.33*** (-3.48)	-2.17** (-2.01)	-3.21*** (-2.84)	-3.57*** (-3.16)
Institutional	0.35 (0.61)	0.63 (1.17)	0.76 (1.45)	0.94* (1.79)	3.81 (1.38)	5.34** (2.07)	5.55** (2.16)	5.91** (2.28)
Manager	2.38* (1.78)	2.03 (1.23)	2.75* (1.73)	2.88 (1.45)	3.60 (0.42)	6.46 (0.76)	9.17 (1.11)	9.60 (1.10)
Family	0.98*** (6.74)	1.05*** (6.89)	1.11*** (5.16)	1.03*** (4.77)	2.81*** (4.15)	3.67*** (5.22)	4.56*** (4.27)	4.38*** (4.09)
Private equity	-0.21 (-0.31)	0.67 (1.00)	0.77 (1.20)	1.04 (1.57)	-3.98 (-1.03)	-0.57 (-0.15)	-0.38 (-0.10)	0.19 (0.05)
Public authority	-1.91*** (-9.70)	-1.57*** (-6.83)	-1.67*** (-7.37)	-1.08*** (-4.98)	-5.02*** (-6.41)	-3.32*** (-3.32)	-3.77*** (-3.62)	-2.33** (-2.28)

Leverage ratio

Table IX presents the results of equation (3) using the leverage ratio as dependent variable. The main independent variable for regression 1 to 4 is, again, the blockholder-dummy. For regression 6 to 8, I use the number of shareholders as proxy for shareholder concentration.

As could be seen, the blockholder-dummy has a positive and significant effect on the leverage ratio of the used sample. I control for firm size using the logarithm of sales, following a number of capital structure studies (e.g. Baker and Wurgler (2002), Frank and Goyal (2003), and Lemmon and Zender (2007)). The positive and significant sign is consistent with previous evidence, since larger firms are

more diversified, have easier access to the capital markets and borrow at lower interest rates (González & González, 2011). Besides this, I find a significant and negative relationship between profitability and leverage. This in line with the pecking order hypothesis that information asymmetries cause firms to prefer internal financing when available (Wald, 1999). The R^2 of regression 1 is 0.06.

Table IX
The effect of shareholder concentration on the leverage ratio

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (3). All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Leverage ratio							
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Blockholder	0.04*** (4.36)	0.03*** (3.63)	0.03*** (3.76)	0.02** (2.47)				
No. of shareholders					-0.00*** (-4.10)	-0.00*** (-2.91)	-0.00*** (-2.85)	-0.00 (-1.30)
Sales	0.01*** (8.65)	0.02*** (11.62)	0.02*** (10.69)	0.08*** (23.44)	0.01*** (8.85)	0.02*** (11.61)	0.02*** (10.67)	0.08*** (23.20)
Profitability	-0.01*** (-27.29)	-0.01*** (-32.89)	-0.01*** (-34.18)	-0.01*** (-39.00)	-0.01*** (-27.11)	-0.01*** (-32.76)	-0.01*** (-34.03)	-0.01*** (-38.88)
Insider			-0.02** (-2.01)	-0.03*** (-3.72)			-0.02* (-1.87)	-0.03*** (-3.62)
Growth			0.12*** (18.58)	0.14*** (21.97)			0.12*** (18.41)	0.14*** (21.82)
Assets				-0.07*** (-21.65)				-0.07*** (-21.43)
Country-FE	No	No	Yes	Yes	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
R^2	0.06	0.21	0.22	0.27	0.06	0.21	0.22	0.27
Obs.	48,555	48,555	48,555	48,555	48,313	48,313	48,313	48,313

The control variables for firm growth and inside ownership are also significant and have the expected sign, while the R^2 of the model increases when I add fixed effects. Noteworthy is the negative coefficient of assets in regression 4. Although a number of studies find a positive relationship, it could be the case that the cost of issuing equity is much higher for small firms than for large firms, leading to a negative relationship (Titman & Wessels, 1988). However, it could also be the case that the strong correlation between assets and sales has a negative effect. The significant relationship between inside ownership and leverage suggests that a firm is taking less risk when the controlling shareholder is also manager of the company. The R^2 of regression 4 is 0.27.

Looking at regressions 5 to 8, we almost see no effect of the number of shareholders on the leverage ratio. If rounded to 2 decimal places, the effect of the number of shareholders is zero. The control variables are all significant and have the expected sign. The reason for the very small effect of the number of shareholders has already been discussed: the number of shareholders does not provide information about the presence of a blockholder, but could give an indication of whether a blockholder is present.

Overall, the results are mixed. When taking the ROA as measure for firm performance, there is a positive link between shareholder concentration and firm performance, in line with hypothesis 3. However, when looking at the relationship between shareholder concentration and the ROE, there is no positive link.

Shareholder type and leverage

Lastly, I will look for the effect of different types of shareholders on the leverage ratio. The results of equation (4) are shown in appendix B.[8] After the regression, the differences in coefficients for the type of shareholders were compared with the average leverage ratio of the total sample. The results are displayed in table X. Although hypothesis 4 states that "*the management as most important shareholder has a negative effects on the leverage ratio while there is a positive relation between a bank as blockholder and the leverage ratio*", no significant relationships between those variables and the leverage ratio were found. I do find significant differences for institutional investors, families, private equity funds and public authorities. Apparently, institutional investors, families and private equity funds have larger incentives to let the company borrow more money, since there is a positive and significant effect of those types of shareholders on the leverage ratio. Important to note is that this does not say anything about the optimal capital structure of the company, but only shows information about deviation from the average leverage ratio.

[8] The results of regression (4) are in line with previous findings

Table X
The effect of the presence of a blockholder on firm performance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. I excluded firms without a controlling shareholder and firms for which the type of controlling shareholder is unknown. The table presents the contrasts involving the dummy-variables for different types of shareholders from the panel OLS regressions as discussed in equation (4). All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Leverage ratio			
Contrast vs. mean	(1)	(2)	(3)	(4)
Corporate	0.01***	0.00	-0.00	-0.01**
	(4.37)	(0.77)	(-1.27)	(-2.44)
Financial	0.02	0.01	0.01	0.00
	(1.60)	(1.13)	(0.65)	(0.44)
Foundation	-0.06***	-0.01	-0.02	-0.02
	(-5.25)	(-1.13)	(-1.25)	(-1.59)
Institutional	0.05**	0.06***	0.06***	0.06***
	(2.16)	(2.76)	(2.64)	(2.90)
Manager	0.02	-0.02	0.01	0.03
	(0.20)	(-0.12)	(0.05)	(0.18)
Family	0.02***	0.02***	0.04***	0.04***
	(3.71)	(3.67)	(5.78)	(5.09)
Private equity	0.07**	0.10***	0.10***	0.10***
	(2.14)	(2.98)	(2.80)	(2.91)
Public authority	-0.08***	-0.06***	-0.06***	-0.04***
	(-10.18)	(-6.20)	(-6.69)	(-3.85)

This deviation from the mean could be the case for private equity funds, because they often use a leveraged buy-out. In this way, a company is acquired by a private equity fund using a relatively large portion of outside debt financing (Kaplan & Stromberg, 2009). Institutional investors could have more experience and incentives to monitor management, which could lead to a higher leverage ratio too. The same applies to family ownership. Lastly, there is a significant and negative coefficient for government ownership. One possible reason for this could be that government ownership is associated with lower governance quality, especially in civil law countries like Belgium, Germany and the Netherlands. In this case, the shareholder may have fewer incentives to control the firm performance and leverage ratio, since shareholder rights are insufficient to influence the management. (Borisova, Brockman, Salas, & Zagorchev, 2012).

Robustness checks

To check whether the results found are robust, I will perform four different checks in this section. First of all, I will use a different measure for the ROA, by using the EBITDA divided by the book value of total assets. Second, I will choose another time sample from 2012 until 2017. In this way, I expect to exclude the effects of the economic crisis. Third, I will use an interaction effect between the number of shareholders and the presence of a blockholder to study the possible reason for a significant and positive effect of the number of shareholders on the ROE. Lastly, I will exclude companies with a public authority as controlling shareholder, to check if this affects the results.

Some papers show that the ROA measured by the EBITDA divided by total book assets could also be a reliable proxy for firm performance, for example a paper of Barton et al (2010). Therefore, I perform regression (1) and regression (2) using this way of calculating the ROA as dependent variable. Appendix C and D show the results of those regressions. For regression (1), the control variables have again the expected sign and are significant. Interesting to notice is the coefficient for the blockholder-dummy, which is only significant for the first regression. The number of shareholders has a positive and significant effect on the ROA measured by the EBITDA. When looking at the different types of shareholders, the results are in line with table VIII: family has a positive and significant impact for all regressions, while a public authority has a significant and negative effect. In addition, corporate shareholders have a negative and significant effect on the ROA.

Secondly, I will look for the effect of the blockholder-dummy and the number of shareholders together. After this regression, I will add an interaction effect between the blockholder-dummy and the number of shareholders. As discussed earlier, a higher number of shareholders could be an indication for a profitable and sustainable firm, leading to a positive relation between this variable and firm performance. On the other side, a higher number of shareholders could lead to a free rider problem, leading to a negative relationship between the number of shareholders and firm performance. Table XI shows the results of regression (1), including both the blockholder-dummy and the number of shareholders. The results are on average the same as before: the blockholder-dummy is significant at a 1%-level, while the control variables still have their expected sign. The number of shareholders is still positive and significant, eventually because of the "popularity" of some companies.[9] Table XII, besides, shows the results of regression (1) with an interaction effect between the blockholder-dummy and the number of shareholders. As could be seen, the blockholder-dummy is significant when the ROA is the dependent variable, while the blockholder-dummy is only significant for regression 5 and 6 when the ROE is dependent. The number of shareholders is only

[9] The ROA is again calculated as explained in the methodology-section.

significant for the regressions with the ROE as dependent variable. The interaction effect shows a significant and positive effect on both the ROA and the ROE. From this, I conclude that a higher number of shareholders combined with a blockholder leads to even better firm performance.

The results of regression (3) including both proxies for firm performance and the interaction effect can be found in Appendix E and F, but do not show any remarkable results. When taking both the blockholder-variable and number of shareholders into account, we observe only a constant and significant positive relation between the blockholder-dummy and the leverage ratio. The value for the number of shareholders is almost zero. When adding an interaction term, the blockholder-dummy is only significant for regression 1 to 3.

Table XI
The effect of both a blockholder and no. of shareholders on firm perfomance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (1), while including both proxies. All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Return on Assets				Return on equity			
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Blockholder	1.38*** (4.74)	1.31*** (4.56)	1.13*** (4.06)	0.93*** (3.49)	5.54*** (4.75)	4.23*** (3.59)	3.68*** (3.16)	3.17*** (2.76)
No. of shareholders	0.04** (2.51)	0.04*** (3.07)	0.03*** (2.61)	0.03** (2.44)	0.24*** (3.62)	0.19*** (3.79)	0.17*** (3.40)	0.17*** (3.35)
Size	-0.29*** (-8.02)	-0.19*** (-4.43)	-0.35*** (-7.94)	-1.81*** (-22.61)	-1.70*** (-10.25)	-1.44*** (-6.86)	-1.90*** (-8.76)	-5.29*** (-13.90)
Debt	-7.34*** (-27.30)	-8.86*** (-31.80)	-9.19*** (-33.53)	-10.56*** (-38.82)	22.61*** (17.45)	16.67*** (12.67)	15.87*** (12.04)	12.69*** (9.46)
Insider			0.10 (0.47)	-0.09 (-0.44)			-0.06 (-0.06)	-0.50 (-0.52)
Growth			8.05*** (27.63)	8.13*** (28.56)			20.37*** (14.87)	20.48*** (15.04)
Sales				2.34*** (24.30)				5.64*** (12.39)
Employees				-0.66*** (-9.31)				-1.78*** (-5.13)
Country-FE	No	No	Yes	Yes	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
R^2	0.06	0.15	0.18	0.22	0.03	0.11	0.12	0.13
Obs.	48,313	48,313	48,313	48,313	47,928	47,928	47,928	47,928

Table XII
The interaction effect and firm perfomance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (1), while including an interaction. All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Return on Assets				Return on equity			
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Blockholder	0.80** (2.54)	0.95*** (3.06)	0.73** (2.39)	0.51* (1.73)	2.89** (2.27)	2.73** (2.12)	2.06 (1.61)	1.49 (1.18)
No. of shareholders	0.02 (1.28)	0.03* (1.84)	0.02 (1.19)	0.01 (0.94)	0.13** (2.25)	0.13** (2.45)	0.10* (1.95)	0.10* (1.85)
Blockholder* shareholder	0.17*** (3.50)	0.10** (2.41)	0.11*** (2.78)	0.12*** (2.97)	0.78*** (4.06)	0.42*** (2.84)	0.45*** (3.06)	0.47*** (3.18)
Size	-0.31*** (-8.42)	-0.20*** (-4.59)	-0.36*** (-8.12)	-1.82*** (-22.68)	-1.78*** (-10.62)	-1.47*** (-7.00)	-1.94*** (-8.92)	-5.34*** (-14.00)
Debt	-7.36*** (-27.43)	-8.87*** (-31.83)	-9.20*** (-33.58)	-10.57*** (-38.87)	22.53*** (17.43)	16.65*** (12.65)	15.84*** (12.03)	12.65*** (9.44)
Insider			0.09 (0.43)	-0.10 (-0.48)			-0.09 (-0.10)	-0.53 (-0.56)
Growth			8.06*** (27.66)	8.14*** (28.59)			20.41*** (14.89)	20.51*** (15.07)
Sales				2.34*** (24.29)				5.65*** (12.40)
Employees				-0.66*** (-9.32)				-1.78*** (-5.14)
Country-FE	No	No	Yes	Yes	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
R^2	0.06	0.15	0.18	0.22	0.03	0.11	0.12	0.13
Obs.	48,313	48,313	48,313	48,313	47,928	47,928	47,928	47,928

For the third robustness check, I use another time frame. When doing the same regressions for the period 2011 – 2017, the results are on average the same as before. The results are in line with table VI, VII and IX while the most important variables show the same coefficients and significance. The same is the case for table VIII and X: family as a blockholder has a positive impact on the ROA, while a public authority has a negative effect on the ROA for all regressions. The family-dummy is also positive for the regression with the ROE as dependent variable, while the public authority and foundation have a negative effect on the ROE. Lastly, an institutional controlling shareholder, a family and a private equity or venture capital fund have again a positive effect on the leverage ratio, while there is a negative link when the public authority is the most important shareholder.

Lastly, I check for the differences between different types of shareholders, while excluding companies with a public authority as controlling shareholder. As discussed, in countries like Germany and the Netherlands, the government often only acts as shareholder when private markets will not suffice (Poterba, 1996). For this reason, it could be that the differences between the other types of controlling shareholders compared to the average performance and average leverage do not become visible. In appendix G and H, the results of equation (2) and (4) without the public authority as controlling shareholder are presented. The results are in line with table VIII and X, although it is noteworthy that there is a significant and negative difference for corporate shareholders for this robustness check in comparison with the original regression. When looking at the effect of the shareholder type on the leverage ratio, the results are again the same. Institutional investors, families and private equity funds have a positive effect on the leverage ratio in comparison with the average leverage ratio, while foundations have a more negative leverage ratio than the average ratio.

VI. Conclusion

A lot of research has highlighted the principal-agent problem that arose through the separation of ownership and control. Especially the relationship between ownership structure and firm performance is important and has been studied for both developed and underdeveloped countries. This thesis provides new insights into the relationship between ownership structure, firm performance and leverage by focussing on Belgium, Germany and the Netherlands and both on listed and non-listed companies after the economic crisis.

Using a sample of 14,006 companies for the period 2009 – 2017, I find that the presence of a blockholder has a positive impact on firm performance, measured by the ROA and the ROE. This is in line with the theory that a higher concentration of ownership could lead to more incentives for the largest shareholder to monitor and control the company. I also find a positive and significant link between the number of shareholders and the ROE, suggesting that more popular companies, based on their performance, attract more shareholders.

Furthermore, I examined the relationship between different types of shareholders on firm performance. I find a positive relationship between a family as controlling shareholder on the ROA and a negative relationship between a public authority and the ROA. This is the same for the relationship between the type of shareholders and the ROE, while also corporate investors and foundations have a negative effect on the ROE. While other studies find a positive relationship between private equity funds and firm performance, this is not the case for the sample I used. Besides, other studies showed a positive relation between a public authority and firm performance,

but this is not the case for this study. Reason for this may be the fact that the government will only act as a shareholder if private markets will not suffice.

I also studied the effect of the ownership structure on the leverage ratio. The presence of a blockholder has a positive and significant effect on the leverage ratio, while there seems to be almost no relationship between the number of shareholders and the leverage ratio. Although existing studies show mixed results, a positive relationship is in line with the theory that an important (outside) shareholder could lead to more risk-taking and a higher debt-level.

Lastly, I studied the relationship between the type of shareholder and the leverage ratio. Although I expected a negative link between the management and the leverage ratio, no significant relationship was found. I did find a positive relationship between institutional investors, families and private equity funds and the leverage ratio, while there is a negative relationship between a public authority and the leverage ratio.

The discussed results are robust to other time samples (2011 – 2017), after the economic crisis, excluding companies with a public authority as controlling shareholder and another proxy for firm performance. However, there are some limitations which could be taken into account for further research. First of all, the proxy for shareholder concentration is based on the *Orbis* database. Although the independence indicator is reliable, this says little about possible changes in ownership structure: I only used companies where the ownership structure has remained the same over time. It is interesting to know if a change in ownership structure (i.e. shareholder concentration or shareholder type) could lead to a change in firm performance or leverage ratio.

Besides, I did not have information about the exact percentages and shareholders of all companies. It could be that shareholders, other than the controlling shareholder, have incentives to monitor and control the company. However, I did not control for the complete ownership structure and presence of other (types of) shareholders and did not include the exact percentages of ownership of the blockholders. Other studies have shown that the relationship between ownership structure, firm performance and leverage ratio is not linear, but will be different based on the percentage of shares the blockholder owns. Lastly, I only looked for differences in shareholder type if there was a controlling shareholder type. This does not say anything about differences when there are no controlling shareholders.

Appendices

This appendix details the variable construction used in this thesis

Return on equity	=	Net income/shareholder equity
Return on assets	=	Net income/total book assets
Firm Size	=	log (book assets)
Total equity	=	total assets – total liabilities
Leverage ratio	=	total debt/total book assets
Profitability	=	Net income/total book assets
Sales	=	log (total sales)
Firm's growth	=	(total $assets_t$ – total $assets_{t-1}$)/total $assets_{t-1}$

Appendix A
The effect of the type of a blockholder on firm performance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (2). All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to two decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Return on Assets				Return on Equity			
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Corporate	9.72*** (45.92)	4.15*** (10.93)	3.60*** (9.00)	-3.69*** (-4.13)	7.31*** (9.31)	182.63*** (97.77)	181.99*** (96.59)	162.99*** (37.96)
Financial	9.63*** (25.75)	4.72*** (9.67)	4.16*** (8.36)	-3.04*** (-3.23)	5.74*** (3.76)	184.10*** (81.66)	183.49*** (80.39)	164.66*** (36.84)
Foundation	9.17*** (25.39)	4.46*** (9.42)	3.61*** (7.20)	-3.77*** (-4.14)	3.63*** (2.82)	180.95*** (82.39)	179.37*** (78.65)	160.20*** (36.38)
Institutional	9.99*** (16.32)	4.87*** (7.49)	4.43*** (6.79)	-2.59** (-2.49)	10.77*** (3.81)	188.46*** (60.46)	188.12*** (60.75)	169.68*** (33.96)
Manager	12.02*** (8.88)	6.28*** (3.71)	6.43*** (3.90)	-0.65 (-0.30)	10.56 (1.23)	189.58*** (21.85)	191.75*** (22.34)	173.37*** (17.68)
Family	10.62*** (40.23)	5.29*** (15.84)	4.79*** (10.00)	-2.51*** (-2.75)	9.77*** (9.21)	186.79*** (113.59)	187.14*** (84.62)	168.15*** (38.49)
Private equity	9.43*** (13.16)	4.92*** (6.37)	4.45*** (5.86)	-2.50** (-2.24)	2.98 (0.76)	182.55*** (43.12)	182.20*** (43.70)	163.96*** (29.11)
Public authority	7.72*** (24.96)	2.68*** (6.00)	2.01*** (4.28)	-4.61*** (-5.08)	1.94 (1.52)	179.80*** (81.97)	178.81*** (79.47)	161.43*** (36.56)
Size	-0.24*** (-6.16)	-0.19*** (-4.25)	-0.35*** (-7.59)	-1.77*** (-21.05)	-1.57*** (-8.76)	-1.44*** (-6.43)	-1.88*** (-8.11)	-5.27*** (-12.73)
Debt	-7.66*** (-27.89)	-9.11*** (-31.98)	-9.46*** (-33.77)	-10.71*** (-38.53)	21.88*** (16.53)	15.84*** (11.79)	14.91*** (11.10)	11.95*** (8.77)
Insider			-0.94*** (-3.13)	-1.08*** (-3.62)			-4.43*** (-2.97)	-4.77*** (-3.20)
Growth			7.92*** (26.75)	8.01*** (27.56)			20.08*** (14.20)	20.21*** (14.39)
Sales				2.28*** (22.86)				5.56*** (11.44)
Employees				-0.65*** (-8.68)				-1.69*** (-4.68)
Country-FE	No	No	Yes	Yes	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
R^2	0.27	0.34	0.36	0.39	0.14	0.22	0.23	0.23
Obs.	45,326	45,326	45,326	45,326	44,941	44,941	44,941	44,941

Appendix B
The effect of the type of a blockholder on leverage

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (4). All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to two decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Leverage ratio			
Variable	(1)	(2)	(3)	(4)
Corporate	0.59***	0.96***	0.98***	0.94***
	(93.03)	(110.25)	(90.77)	(88.89)
Financial	0.60***	0.97***	0.99***	0.96***
	(50.46)	(73.87)	(68.10)	(66.93)
Foundation	0.52***	0.95***	0.97***	0.93***
	(37.43)	(64.26)	(58.16)	(57.65)
Institutional	0.64***	1.02***	1.04***	1.01***
	(26.06)	(43.94)	(43.03)	(42.86)
Manager	0.61***	0.94***	0.99***	0.98***
	(5.13)	(7.08)	(7.20)	(6.92)
Family	0.61***	0.98***	1.03***	0.99***
	(70.15)	(172.36)	(74.61)	(73.30)
Private equity	0.65***	1.06***	1.08***	1.05***
	(20.20)	(30.13)	(30.02)	(30.41)
Public authority	0.51***	0.90***	0.92***	0.91***
	(48.97)	(68.99)	(61.87)	(63.08)
Sales	0.01***	0.02***	0.02***	0.08***
	(8.80)	(11.09)	(9.91)	(21.30)
Profitability	-0.01***	-0.01***	-0.01***	-0.01***
	(-28.19)	(-33.13)	(-34.50)	(-38.72)
Insider			-0.06***	-0.07***
			(-5.33)	(-6.29)
Growth			0.12***	0.14***
			(17.85)	(21.03)
Assets				-0.07***
				(-19.62)
Country-FE	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes
R^2	0.85	0.87	0.88	0.88
Obs.	45,326	45,326	45,326	45,326

Appendix C

The effect of the presence of a blockholder on firm performance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates form panel OLS regressions as discussed in equation (1), while using a different measure for the ROA. All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to two decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	ROA (EBITDA)							
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Blockholder	0.71*** (2.05)	0.49 (1.42)	0.14 (0.43)	0.06 (0.19)				
No. of shareholders					0.06*** (3.16)	0.05*** (3.45)	0.05*** (3.25)	0.04** (2.33)
Size	-0.74*** (-15.19)	-0.77*** (-13.56)	-1.00*** (-17.29)	-3.54*** (-36.20)	-0.78*** (-15.78)	-0.80*** (-13.49)	-1.02*** (-17.56)	-3.56*** (-35.92)
Debt	-5.49*** (-16.49)	-6.64*** (-19.28)	-6.97*** (-20.48)	-9.01*** (-27.00)	-5.50*** (-16.45)	-6.66*** (-19.27)	-6.99*** (-20.48)	-9.02*** (-26.95)
Insider			0.51* (1.84)	0.19 (0.71)			0.55** (1.99)	0.22 (0.83)
Growth			4.88*** (15.49)	5.20*** (16.93)			4.88*** (15.47)	5.20*** (16.92)
Sales				2.92*** (24.84)				2.93*** (24.61)
Employees				0.33*** (3.70)				0.32*** (3.61)
Country-FE	No	No	Yes	Yes	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
R^2	0.03	0.14	0.16	0.22	0.03	0.14	0.16	0.22
Obs.	54,053	53,053	54,053	54,053	53,833	53,833	53,833	53,833

Appendix D
The effect of the type of a blockholder on firm performance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (2), while using a different measure for the ROA. All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to two decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	ROA (EBITDA)			
Contrast vs. mean	(1)	(2)	(3)	(4)
Corporate	-0.26***	-0.33***	-0.26***	-0.31***
	(-3.49)	(-4.50)	(-3.03)	(-3.75)
Financial	-0.01	0.76*	0.90**	1.05***
	(-0.03)	(1.82)	(2.17)	(2.67)
Foundation	-0.83**	0.23	-0.04	-0.47
	(-2.44)	(0.68)	(-0.12)	(-1.45)
Institutional	0.06	0.02	0.09	0.57
	(0.08)	(0.02)	(0.14)	(0.91)
Manager	3.27	3.53	4.62**	4.61**
	(1.43)	(1.51)	(2.11)	(2.41)
Family	1.91***	1.89***	1.77***	1.35***
	(11.38)	(10.75)	(7.54)	(5.80)
Private equity	-1.03	-0.55	-0.29	0.30
	(-1.16)	(-0.64)	(-0.35)	(0.37)
Public authority	-1.80***	-2.12***	-2.24***	-1.18***
	(-7.37)	(-7.86)	(-8.32)	(-4.70)

Appendix E
The effect of both a blockholder and no. of shareholders on leverage

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (3), while including both proxies. All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Leverage ratio			
Variable	(1)	(2)	(3)	(4)
Blockholder	0.02**	0.02**	0.03**	0.02**
	(2.36)	(2.23)	(2.39)	(2.00)
No. of shareholders	-0.00***	-0.00*	-0.00*	-0.00
	(-2.80)	(-1.77)	(-1.65)	(-0.29)
Profitability	-0.01***	-0.01***	-0.01***	-0.07***
	(-27.20)	(-32.82)	(-34.10)	(-21.42)
Sales	0.01***	0.02***	0.02***	0.08***
	(8.76)	(11.54)	(10.64)	(23.19)
Insider			-0.02**	-0.03***
			(-2.01)	(-3.73)
Growth			0.12***	0.14***
			(18.44)	(21.84)
Assets				-0.07***
				(-21.42)
Country-FE	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes
R^2	0.06	0.21	0.22	0.27
Obs.	48,313	48,313	48,313	48,313

Appendix F
The interaction effect and leverage

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. The table presents parameter estimates from panel OLS regressions as discussed in equation (3), while including an interaction. All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Leverage ratio			
Variable	(1)	(2)	(3)	(4)
Blockholder	0.02**	0.02*	0.02*	0.01
	(2.00)	(1.77)	(1.91)	(1.01)
No. of shareholders	-0.00	-0.00*	-0.00*	-0.00
	(-0.29)	(-1.87)	(-1.78)	(-1.16)
Blockholder* shareholder	0.00**	0.00	0.00	0.00**
	(2.15)	(0.83)	(0.88)	(2.34)
Profitability	-0.01***	-0.01***	-0.01***	-0.01***
	(-38.91)	(-32.83)	(-34.12)	(-38.96)
Sales	0.01***	0.02***	0.02***	0.08***
	(7.86)	(11.49)	(10.59)	(23.18)
Insider			-0.02**	-0.03***
			(-2.02)	(-3.76)
Growth			0.12***	0.14***
			(18.45)	(21.89)
Assets				-0.07***
				(-21.44)
Country-FE	No	No	Yes	Yes
Year-FE	No	Yes	Yes	Yes
Industry-FE	No	Yes	Yes	Yes
R^2	0.06	0.21	0.22	0.27
Obs.	48,313	48,313	48,313	48,313

Appendix G
The effect of different types of blockholders on firm performance

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. I excluded firms without a controlling shareholder and firms for which the type of controlling shareholder is unknown and for companies for which the controlling shareholder is the public authority. The table presents the contrasts involving the dummy-variables for different types of shareholders from the panel OLS regressions as discussed in equation (2). All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, **, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Return on Assets				Return on Equity			
Contrast vs. mean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Corporate	-0.14***	-0.26***	-0.26***	-0.27***	-0.24	-0.89***	-1.02***	-1.04***
	(-2.96)	(-5.47)	(-4.39)	(-4.61)	(-1.14)	(-4.17)	(-3.63)	(-3.69)
Financial	-0.22	0.29	0.29	0.38	-1.79	0.54	0.44	0.65
	(-0.73)	(0.93)	(0.96)	(1.31)	(-1.42)	(0.41)	(0.33)	(0.49)
Foundation	-0.72**	-0.11	-0.37	-0.47	-3.93***	-2.61**	-3.68***	-3.86***
	(-2.38)	(-0.36)	(-1.21)	(-1.54)	(-4.07)	(-2.35)	(-3.15)	(-3.33)
Institutional	0.14	0.42	0.54	0.82	3.18	4.89*	5.08**	5.66**
	(0.24)	(0.77)	(1.02)	(1.53)	(1.15)	(1.88)	(1.97)	(2.17)
Manager	2.14	1.89	2.61	2.80	2.95	6.32	9.12	9.58
	(1.59)	(1.13)	(1.62)	(1.40)	(0.34)	(0.74)	(1.09)	(1.10)
Family	0.75***	0.85***	0.89***	0.89***	2.18***	3.32***	4.05***	4.02***
	(5.19)	(5.68)	(4.19)	(4.17)	(3.24)	(4.76)	(3.85)	(1.06)
Private equity	-0.41	0.55	0.65	0.98	-4.60	-0.90	-0.68	0.03
	(-0.60)	(0.82)	(1.00)	(1.47)	(-1.19)	(-0.24)	(-0.18)	(0.01)

Appendix H
The effect of different types of blockholders on firm leverage

The sample consists of all nonfinancial firms in the *Orbis* database based in Belgium, Germany and the Netherlands from 2009 to 2017. I excluded firms without a controlling shareholder and firms for which the type of controlling shareholder is unknown and for companies for which the controlling shareholder is the public authority. The table presents the contrasts involving the dummy-variables for different types of shareholders from the panel OLS regressions as discussed in equation (4). All variables are trimmed at the upper and lower 1-percentile. Country, year and industry fixed effects denote whether those effects are included in the specification. The *t*-statistics are computed using standard errors robust to clustering at the company level and heteroscedasticity. Coefficients are rounded off to three decimals, the parenthetical values represent the *t*-statistic. *, *, *** indicate statistical significance at the 10%, 5% and 1%-level.

	Leverage ratio			
Contrast vs. mean	(1)	(2)	(3)	(4)
Corporate	-0.00 (-0.30)	-0.01*** (-3.00)	-0.01*** (-5.06)	-0.01*** (-5.06)
Financial	0.01 (0.69)	0.01 (0.51)	-0.00 (-0.04)	0.00 (0.12)
Foundation	-0.07*** (-5.98)	-0.02* (-1.66)	-0.02* (-1.82)	-0.02* (-1.91)
Institutional	0.04* (1.75)	0.05** (2.38)	0.05** (2.22)	0.06*** (2.69)
Manager	0.01 (0.13)	-0.02 (-0.18)	-0.00 (-0.01)	0.02 (0.14)
Family	0.01** (2.11)	0.01*** (2.65)	0.04*** (5.07)	0.03*** (4.85)
Private equity	0.06* (1.82)	0.10*** (2.79)	0.09** (2.58)	0.09*** (2.81)

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